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EXAMINER

KIM, DAVID S

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2613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/809,432	Applicant(s) OKANO ET AL.	
	Examiner DAVID S. KIM	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24, 29 and 40-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24, 29 and 40-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. **Claims 41 and 47** are objected to because of the following informalities:

In **claim 41**, “a third light source unit” is introduced. However, parent claim 24 already implies three light sources, i.e., (1) “an illumination light source”, (2) “one of said light sources”, and (3) “another of said light sources”. Thus, the “third light source unit” of claim 41 conflicts with the three light sources already introduced in parent claim 24.

In **claim 47**, “said information” is used, but antecedent basis is lacking. Claim 47 depends from claim 46, but Applicant may have intended claim 47 to depend from claim 29.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. **Claims 24, 43-52, 57, and 58** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling et al. (WO 02/25842 A2, hereinafter “Dowling”) in view of Hiramatsu (U.S. Patent No. 7,099,589 B1).

Regarding claim 24, Dowling discloses:

A communications system comprising:

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a communications lighting apparatus (Dowling, Fig. 5) having an illumination light source adapted to emit illumination light (Dowling, light source 132) and an information-transmitting unit adapted to emit an optical signal (Dowling, transmitter 136),

wherein said information-transmitting unit is mounted on said illumination light source (Dowling, see the embodiment of Fig. 7. Notice the mounting of module 716 onto base 702 in Fig. 7. Module 716 is an output device that may emit an optical signal (p. 45, l. 17-19). Base 702 may be an illumination light source (p. 44, l. 17-21)).

Dowling does not expressly disclose:

wherein said information-transmitting unit has light sources, a light beam from one of said light sources being emitted independent of a light beam from another of said light sources.

However, these techniques are known in the art, as shown by Hiramatsu (Example 2 on col. 12, l. 45 – col. 14, l. 45, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of the same wavelength, see col. 13, l. 62 - col. 14, l. 11; Example 1 on col. 5+, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of different wavelengths, see col. 11, l. 27-45). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include these techniques in the apparatus of Dowling. One of ordinary skill in the art would have been motivated to do this to provide the benefit of providing multiple communication channels for increased transmission rates or for communicating with multiple terminals (e.g., Hiramatsu, multi-beam transmitter 102 in Fig. 1 communicates with multiple terminals).

Regarding claim 43, Dowling in view of Hiramatsu discloses:

A communications system according to claim 24, wherein said illumination light source intermittently emits another optical signal in a predetermined pattern (Dowling, various patterns on p. 37, last paragraph).

Regarding claim 44, Dowling in view of Hiramatsu discloses:

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A communications system according to claim 24, wherein light beams from said light sources are of the same wavelength (Hiramatsu, Example 2 on col. 12, l. 45 – col. 14, l. 45, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of the same wavelength, see col. 13, l. 62 - col. 14, l. 11).

Regarding claim 45, Dowling in view of Hiramatsu discloses:

A communications system according to claim 24, wherein light beams from said light sources are of different wavelengths (Hiramatsu, Example 1 on col. 5+, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of different wavelengths, see col. 11, l. 27-45).

Regarding claim 46, Dowling in view of Hiramatsu discloses:

A communications system according to claim 24, wherein said information-transmitting unit includes a light source section (Dowling, transmitter 136), said light source section being adapted to emit said optical signal.

Regarding claim 47, Dowling in view of Hiramatsu discloses:

A communications system according to claim 46, wherein said optical signal includes said information (Dowling, transmitter 136 in Fig. 5 is an example of an emitter on p. 13, l. 11-14 that emits optical communication signals, which implies inclusion of information).

Regarding claim 48, Dowling in view of Hiramatsu discloses:

A communications system according to claim 24, wherein said information-transmitting unit includes an interface, said interface being adapted to receive an input signal from an external device (Dowling, implied by the connections between smart lighting devices 1 in Fig. 2).

Regarding claim 49, Dowling in view of Hiramatsu discloses:

A communications system according to claim 48, wherein said information-transmitting unit includes a recording section (Dowling, e.g., buffer 97 in Fig. 3), said recording section being adapted to record said input signal (Dowling, data input at 65 is recorded on buffer 97, p. 35, l. 8-9).

Regarding claim 50, Dowling in view of Hiramatsu discloses:

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A communications system according to claim 48, wherein said interface is a Universal Serial Bus (USB) (Dowling, p. 14, l. 6, "USB").

Regarding claim 51, Dowling in view of Hiramatsu discloses:

A communications system according to claim 48, wherein said interface is a fiber connector (Dowling, p. 14, l. 3, "fiber optics" implies some kind of fiber connector between smart lighting devices 1 in Fig. 2).

Regarding claim 52, Dowling in view of Hiramatsu discloses:

A communications system according to claim 24, wherein said information-transmitting unit has an emission band in the near-infrared band, the intermediate far-infrared band or a longer wavelength band (Dowling, infrared on p. 37, last paragraph).

Regarding claim 57, Dowling in view of Hiramatsu discloses:

A communications system according to claim 24, wherein said light sources emit said optical signal (Hiramatsu, e.g., the light sources of 102 in Fig. 1).

Regarding claim 58, Dowling in view of Hiramatsu discloses:

A communications system according to claim 57, further comprising:
a mobile terminal device adapted to receive said optical signal (Dowling, e.g., mobile communication devices on p. 15, l. 3-20, portable devices on p. 48, l. 19-21).

5. **Claims 29 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Newton (*Newton's Telecom Dictionary*, 8th ed.).

Regarding claim 29, Dowling in view of Hiramatsu discloses:

A communications system comprising:
a communications lighting apparatus (Dowling, Fig. 5) having an illumination light source adapted to emit illumination light (Dowling, light source 132) and an information-transmitting unit adapted to emit an optical signal (Dowling, transmitter 136),

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wherein said information-transmitting unit has light sources, a light beam from one of said light sources being emitted independent of a light beam from another of said light sources (Hiramatsu, e.g., the independent sources of 102 in Fig. 1), and

wherein said information-transmitting unit includes a recording medium (Dowling, memory 150 in Fig. 5) and a reading section (Dowling, processor 140),

said reading section being adapted to read information stored in said recording medium (Dowling, notice the interaction between processor 140 and memory 150).

Dowling in view of Hiramatsu does not expressly disclose:

said recording medium being *removable* from said information-transmitting unit.

Notice that Dowling suggests that memory 150 can be any of a number of various types of memory (p. 39, last paragraph). Any suitable removable memory would be another obvious type of memory for Dowling. Various examples of removable memory are well known in the art, as exemplified by Newton ("removable media" (p. 868), "removable cartridge system" (p. 868), "floppy disk" (p. 452), and "floppy mini" (p. 453)). One of ordinary skill in the art would have been motivated to do this since removable memory is easy to replace, reprogram, and transport (e.g., Newton, the example of the "floppy disk" is easy to replace, reprogram, and transport).

Regarding claim 40, claim 40 introduces limitations that correspond to limitations introduced by claim 29. The corresponding limitations of claim 29 are addressed by teachings from Newton. Similarly, Newton is applied here to address the corresponding limitations of claim 40.

6. **Claims 41 and 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Brooks (U.S. Patent No. 5,218,466).

Regarding claim 41, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 24, further comprising a third light source unit adapted to emit a visible light beam.

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However, such a visible light source unit is known in the art, as shown by Brooks (104 in Figs. 1 and 3). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such a visible light source unit in the apparatus of the prior art of record. One of ordinary skill in the art would have been motivated to do this to indicate the occurrence of an event (Brooks, abstract), which is a useful status indicator.

Regarding claim 42, Dowling in view of Hiramatsu and Brooks discloses:

A communications system according to claim 41, wherein said visible light beam indicates a region in which said optical signal emitted from said information-transmitting unit is receivable (Brooks, 104 in Figs. 1 and 3).

7. **Claims 53 and 54** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Ramaswami et al. (*Optical Networks: A Practical Perspective*, 2nd ed., hereinafter "Ramaswami").

Regarding claim 53, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 24, wherein said information-transmitting unit has an end-plane emission semiconductor laser used as a light source.

However, this type of laser is well known in the art for providing optical sources for optical communications, e.g., a Fabry-Perot laser as shown in Ramaswami (p. 167-168). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such a laser to provide a light source of Dowling. One of ordinary skill in the art would have been motivated to do this since it is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

Regarding claim 54, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 24, wherein said information-transmitting unit has a vertical-plane emission semiconductor laser used as a light source.

However, this type of laser is well known in the art for providing optical sources for optical communications, e.g., a VCSEL as shown in Ramaswami (p. 172-174). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such a laser to provide a

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light source of Dowling. One of ordinary skill in the art would have been motivated to do this since it is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

8. **Claim 55** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Service ("Hot New Beam May Zap Bandwidth Bottleneck").

Regarding claim 55, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 24, wherein said information-transmitting unit has a quantum-cascade semiconductor laser used as a light source.

However, this type of laser is well known in the art for providing optical sources for optical communications, e.g., a QCL as shown in Service (entire article). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such a laser to provide a light source of Dowling. One of ordinary skill in the art would have been motivated to do this since it is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

9. **Claim 56** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Ramaswami and Service.

Regarding claim 56, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 24, wherein said information-transmitting unit is a combination of an end-plane emission semiconductor laser, a vertical-plane emission semiconductor laser, and a quantum-cascade semiconductor layer.

However, these various types of lasers are all well known in the art for providing optical sources for optical communications, e.g., a Fabry-Perot laser and a VCSEL in Ramaswami (p. 167-168, 172-174) and a QCL in Service (entire article). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ any or all of them in any combination in the information-transmitting unit of Dowling. One of ordinary skill in the art would have been motivated to do this since it

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is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

10. **Claim 59** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Leeb et al. (U.S. Patent No. 6,198,230 B1, hereinafter "Leeb").

Regarding claim 59, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 58, wherein said mobile terminal device is adapted to display contents of said optical signal.

However, the mobile terminal devices of Dowling include devices that conventionally comprise displays, such as cellular telephones (Dowling, p. 15, middle paragraph) and portable computers (Dowling, p. 15, last two lines). Additionally, the technique of displaying the contents of a received signal is extremely common in the art; see an example in Leeb (Fig. 10). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange such displays to display the contents of the optical signal received. One of ordinary skill in the art would have been motivated to do this for any number of common reasons for displaying the contents of a received signal, such as to verify the proper reception of the received signal or to alert a user about an improper reception of the received signal.

Response to Arguments

11. Applicant provides a discussion about the entry of amendments after a final rejection when the final rejection is withdrawn (REMARKS, p. 7). Examiner notes the entry of the Amendment After Final Rejection 37 C.F.R. 1.116 filed on 16 July 2007. Accordingly, the merits of this entered amendment have been addressed in this present Office Action.

12. Applicant's arguments filed on 21 March 2008 have been fully considered but they are not persuasive. Applicant presents two salient points.

Regarding the first point, Applicant states:

Dowling fails to disclose, teach, or suggest the wherein said information-transmitting unit has light sources, a light beam from one of said light sources being emitted independent of a light beam from another of said light sources.

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(REMARKS, middle paragraph of p. 11, bottom of p. 13).

Examiner respectfully notes that the standing rejections do not rely on Dowling to address these limitations. Rather, notice the application of teachings from Hiramatsu in the treatment of claim 24. Accordingly, this point is not persuasive.

Regarding the second point, Applicant states:

However, Hiramatsu fails to disclose, teach, or suggest a communications system wherein said information-transmitting unit is mounted on an illumination light source.

(REMARKS, top of p. 12, bottom of p. 13).

Examiner respectfully notes that the standing rejections do not rely on Hiramatsu to address these limitations. Rather, notice the application of teachings from Dowling in the treatment of claim 24. Accordingly, this point is not persuasive.

Summarily, Applicant's arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. S. K./
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613